Supplemental Watershed Plan - EIS #4
Table 1 - Estimated Installation Costs - Alternative 1 (4 Sites & Land Treatment)
Lost River Subwatershed, West Virginia
(Dollars) [1/]

		Acres Federal Land	Acres Nonfederal Land	Total Acres	PL534 Funds	Other Funds	Total Funds
Land Treatment							
Land Treatment (Installed) NRCS							
Cropland	acres	0	6,388	6,388	$0	$1,060,000	$1,060,000
Pastureland (Grassland)	acres	0	19,700	19,700	$0	$1,593,300	$1,593,300
Hayland	acres	0	600	600	$0	$46,600	$46,600
Miscellaneous Land	acres	0	25	25	$0	$2,000	$2,000
Critical Area	acres	0	25	25	$0	$2,000	$2,000
Technical Assistance	n/a	n/a	n/a	n/a	$1,115,400	n/a	$1,115,400
Subtotal (Installed) NRCS	acres	0	26,738	26,738	$1,115,400	$2,703,900	$3,819,300
Land Treatment (Installed) FS							
Forest Land	acres	12,100	56,870	68,970	$0	$309,400	$309,400
Technical Assistance	n/a	n/a	n/a	n/a	$283,000	$46,600	$329,600
Subtotal (Installed) FS	acres	12,100	56,870	68,970	$283,000	$356,000	$639,000
Subtotal Land Treatment	acres	12,100	83,608	95,708	$1,398,400	$3,059,900	$4,458,300
			Number	Total			
Structural Measures							
Floodwater Retarding Structures	number	n/a	2	2	18,364,200	4,054,000	22,418,200
Multiple Purpose Structures	number	n/a	2	2	32,972,100	5,008,600	37,980,700
Subtotal Structural Measures	number	n/a	4	4	51,336,300	9,062,600	60,398,900
Total Project					$52,734,700	$12,122,500	$64,857,200

[1/] Price Base 2009

Supplemental Watershed Plan - EIS #4
Table 2 - Estimated Cost Distribution - Alternative 1 (4 Sites & Land Treatment)
Structural and Nonstructural Measures
Lost River Subwatershed, West Virginia
(Dollars) [1/]

	Federal Funds						Nonfederal Funds						
Item	Construction	Engineering	Real Property Rights	Relocation Payments	Project Admin.	Total PL 534	Construction	Engineering	Real Property Rights	Relocation Payments	Project Admin.	Total Other	Total Installation
Single Purpose Floodwater Retarding Structures													
Site 4	8,671,600	658,000	1,071,900	140,000	189,200	10,730,700	0	0	482,700	28,500	12,700	523,900	11,254,600
Site 4 Road Relocation [2/]	0	0	0	0	0	0	0	0	2,059,600	0	51,500	2,111,100	2,111,100
Site 4 Water Supply Pipe [3/]	0	0	0	0	0	0	27,400	0	0	0	0	27,400	27,400
Site 27	6,191,800	518,400	750,700	26,000	146,600	7,633,500	0	0	297,500	5,300	7,600	310,400	7,943,900
Site 27 Road Relocation [2/]	0	0	0	0	0	0	0	0	1,004,800	0	25,100	1,029,900	1,029,900
Site 27 Water Supply Pipe [3/]	0	0	0	0	0	0	51,300	0	0	0	0	51,300	51,300
Subtotal Single Purpose Floodwater Retarding Structures	14,863,400	1,176,400	1,822,600	166,000	335,800	18,364,200	78,700	0	3,844,600	33,800	96,900	4,054,000	22,418,200
Multiple Purpose Structures													
Site 10 Flood Control Purpose	5,426,000	597,700	1,149,500	124,300	178,400	7,475,900	569,600	0	0	0	16,600	586,200	8,062,100
Site 10 Water Supply Purpose [3/]	0	0	0	0	0	0	176,200	6,800	383,100	28,400	0	594,500	594,500
Site 16 Flood Control Purpose	22,081,800	1,300,600	1,702,300	58,500	353,000	25,496,200	0	0	666,600	11,900	0	678,500	26,174,700
Site 16 Water Supply Purpose [3/]	0	0	0	0	0	0	2,875,200	144,900	90,000	0	39,300	3,149,400	3,149,400
Subtotal Multiple Purpose Structures	27,507,800	1,898,300	2,851,800	182,800	531,400	32,972,100	3,621,000	151,700	1,139,700	40,300	55,900	5,008,600	37,980,700
Grand Total	42,371,200	3,074,700	4,674,400	348,800	867,200	51,336,300	3,699,700	151,700	4,984,300	74,100	152,800	9,062,600	60,398,900

[1/] Price Base 2009

[2/] Road Relocation Costs Paid by WVDOH (100%)

[3/] Water Supply Costs Paid by Sponsors (100%)

Supplemental Watershed Plan - EIS #4
Table 2A - Cost Allocation and Cost-Sharing Summary - Site 16 Only
Structural and Nonstructural Measures
Lost River Subwatershed, West Virginia
(Dollars) [1/]

	Cost Allocation			Cost Sharing					
	Purpose			Public Law 78-534			Other		
	Flood Prevention	Water Supply	Total	Flood Prevention	Water Supply	Total	Flood Prevention	Water Supply	Total
Multiple Purpose Site 16									
construction	22,081,800	2,875,200	24,957,000	22,081,800	0	22,081,800	0	2,875,200	2,875,200
engineering	1,300,600	144,900	1,445,500	1,300,600	0	1,300,600	0	144,900	144,900
relocation	70,400	0	70,400	58,500	0	58,500	11,900	0	11,900
real property rights	2,368,900	90,000	2,458,900	1,702,300	0	1,702,300	666,600	90,000	756,600
project admin.	353,000	39,300	392,300	353,000	0	353,000	0	39,300	39,300
Total	26,174,700	3,149,400	29,324,100	25,496,200	0	25,496,200	678,500	3,149,400	3,827,900

[1/] Price base 2009

Supplemental Watershed Plan - EIS #4
Table 3, Structural Data - Dams with planned storage capacity
Lost River Subwatershed, West Virginia

Item	Unit	Structure number 4	10	16	27	Total
Class of structure		c	c	c	c	xxxx
Seismic zone		1	1	1	1	xxxx
Drainage area	mi^2	32.41	6.69	11.88	3.75	54.73
Runoff curve no. (1-day) (AMC II)		77	71	73	70	xxxx
Time of concentration (T_c)	hrs	4.22	1.40	2.18	1.48	xxxx
Elevation top dam	ft	1480.9	1,621.0	1,574.4	1,952.1	xxxx
Elevation crest auxiliary spillway	ft	1,464.4	1,608.9	1,560.3	1,939.9	xxxx
Elevation crest high stage inlet	ft	1,419.8	1,587.2	1,530.9	1,909.8	xxxx
Elevation crest low stage inlet	ft	------	------	------	------	xxxx
Auxiliary spillway type		Rock	Rock	Rock	Rock	xxxx
Auxiliary spillway bottom width	ft	500	300	400	160	xxxx
Auxiliary spillway exit slope	%	1.5	1.8	1.5	2.0	xxxx
Maximum height of dam	ft	89.0	83.3	78.4	75.0	xxxx
Volume of fill	yd^3	1,134,500	381,350	1,338,000	345,000	3,198,850
Total capacity [1/]	acre ft	6,611	1,681	2,531	570	11,393
Sediment submerged [2/]	acre ft	605	202	212	67	1,086
Sediment aerated	acre ft	48	16	17	5	86
Recreation	acre ft	------	------	------	------	0
Water supply	acre ft	------	400	400	------	800
Floodwater retarding	acre ft	5,958	1,063	1,902	498	9,421
Between high and low stage	acre ft	------	------	------	------	0
Surface area						
Sediment pool	acres	66.0	18.0	27.3	7.2	118.5
Recreation pool	acres	------	------	------	------	0.0
Water supply pool	acres	------	34.6	46.6	------	81.2
Floodwater retarding pool	acres	201.0	66.2	86.8	29.0	383.0
Principal spillway design						
Rainfall volume (1-day)	in	6.53	6.80	6.80	6.75	xxxx
Rainfall volume (10-day)	in	10.88	11.10	9.20	11.30	xxxx
Runoff volume (10-day)	in	5.76	4.78	4.15	4.78	xxxx
Capacity of low stage (max)	ft^3/s	------	------	------	------	xxxx
Capacity of high stage (max)	ft^3/s	801	212	409	195	xxxx
Dimensions of conduit	dia. - in	60	36	48	36	xxxx
Type of conduit		R/C pipe	R/C pipe	R/C pipe	R/C pipe	xxxx
Frequency operation-auxil. spillway	% chance	1.0	1.0	1.0	1.0	xxxx
Auxiliary spillway hydrograph						
Rainfall volume	in	13.18	10.80	10.90	10.86	xxxx
Runoff volume	in	10.17	7.08	7.76	7.00	xxxx
Storm duration	hrs	24	6	6	6	xxxx
Velocity of flow (V_e)	ft/s	13.10	17.50	10.60	10.24	xxxx
Max. reservoir water surface elev.	ft	1,472.60	1,615.10	1,564.98	1,944.20	xxxx
Freeboard hydrograph						
Rainfall volume	in	32.10	27.60	27.60	27.55	xxxx
Runoff volume	in	28.77	23.24	23.72	23.00	xxxx
Storm duration	hrs	24	6	6	6	xxxx
Max. reservoir water surface elev.	ft	1,480.9	1,621.0	1,574.4	1,952.1	xxxx
Capacity equivalents						
Sediment volume	in	0.38	0.61	0.34	0.36	xxxx
Floodwater retarding volume	in	3.45	2.98	3.00	2.49	xxxx
Recreation volume	in	------	------	------	------	xxxx
Water supply volume	in	------	1.12	0.63	------	xxxx

[1/] Total capacity at crest of auxiliary spillway.

[2/] Based on storing 100-year submerged sediment accumulation.

March 2009

Supplemental Watershed Plan - EIS #4
Table 4 - Estimated Average Annual NED Costs
Lost River Subwatershed, West Virginia
(Dollars) [1/]

Evaluation Unit	Total Costs	Amortized Costs	Operation, Maintenance & Replacement Costs	Total Amortized Cost
As-Built Costs for Installed Measures [2/]				
Site 4	13,393,100	619,400	24,300	643,700
Site 27	9,025,100	417,400	24,300	441,700
Site 10	8,656,600	400,400	24,300	424,700
Planning Costs for Remaining Measures				
Site 16	29,324,100	1,356,200	24,300	1,380,500
Land Treatment Costs [3/]	4,458,300	206,200	n/a	206,200
Grand Total for All Measures	64,857,200	2,999,600	97,200	3,096,800

[1/] Price Base 2009, amortized 100 years at 4.625%

[2/] As-built costs for Site 4 and Site 27 indexed from 2006 to 2009 prices as per Supplement #3 and #4 (April 2007 issue)

[3/] Costs for land treatment indexed from 2006 to 2009 prices as per Supplement #3 and #4 (April 2007 issue)

Supplemental Watershed Plan - EIS #4

Table 5 - Estimated Average Annual Flood Damage Reduction Benefits

Lost River Subwatershed, West Virginia

(Dollars) [1/]

Item	Estimated Average Annual Damage		Damage Reduction Benefit [2/]
	Pre-Project Benchmark Conditions	Remaining Damages with Total Project (4 Sites & Land Treatment)	
Road & Bridge	88,800	22,800	56,100
Other Agriculture	130,200	24,200	90,100
Dwellings	133,100	3,300	110,300
Commercial	63,200	36,600	22,600
Upper Cacapon Properties	418,200	324,100	80,000
Streambank	98,900	39,900	50,100
Crop & Pasture	146,300	10,000	115,900
Sediment	22,800	7,100	13,300
Erosion	38,500	17,100	18,200
Subtotal	1,140,000	485,100	556,600
Indirect	114,000	48,500	55,700
Total	1,254,000	533,600	612,300

[1/] Price Base 2009

[2/] Project Damage Reduction Benefits reduced by 15% due to elimination of Site 23

Supplemental Watershed Plan - EIS #4
Table 6 - Comparison of Benefits and Costs for Structural Measures
Lost River Subwatershed, West Virginia
(Dollars) [1/]

	Average Annual Benefits									
Evaluation Unit	Damage Reduction	Water Quality	Changes Land Use Non-Agriculture	Incidental Recreation	Secondary	Redevel-opment	Water Supply	Total	Average Annual Cost	Benefit Cost Ratio
Structural Measures	612,300	290,600	70,300	910,300	141,500	377,100	1,166,800	3,568,900		
Land Treatment Measures	69,300							69,300		
Grand Total	681,600	290,600	70,300	910,300	141,500	377,100	1,166,800	3,638,200	3,096,800	1.17

[1/] Price base 2009

March 2009